



UNION OF CONCERNED SCIENTISTS

1208 Massachusetts Avenue
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What you should know about the hazards of nuclear power

Apr 81

"The technologists claim that if everything works according to their blueprints, atomic energy will be a safe and very attractive solution to the energy needs of the world. This may be correct. However, the real issue is whether their blueprints will work in the real world and not only in a 'technological paradise.'"

Hannes Alfvén
Nobel Laureate in Physics

"The NRC (Nuclear Regulatory Commission), under pressure from the industry, has allowed serious compromises with safety to creep into the design, construction and operation of U.S. nuclear plants. As a result, the country has no present way of knowing how safe or unsafe its nuclear program is."

From *Reader's Digest* article
"The Burning Question of
Brown's Ferry" by James
Nathan Miller

A call to proceed with caution...

The commercial nuclear power plant program planned for the next 25 years in this country represents a serious threat to your health and safety and to the health and safety of the American people. Yet—despite the hazards, despite the growing danger of sabotage from terrorists, despite the unresolved problem of disposing of lethal nuclear wastes safely—you are asked to accept this program as necessary to solve this nation's energy problems.

The Wall Street Journal labeled these nuclear plants "atomic lemons," pointing out that "their unreliability is becoming one of their most dependable features." Yet, you are asked to accept the program as the mainstay of the nation's future electric power supply.

The MITRE Corporation, a Virginia think tank, warns that nuclear materials in the hands of a terrorist group "would give it a power of blackmail over the world at large and the U.S. in particular without precedent in history." (Between 1969 and 1975, ninety nine threats of violence were directed against commercial nuclear facilities.) Yet, you are asked to accept the program as safe.

Insurance companies have refused to provide the public with full coverage against nuclear accidents because the risk is too great. Yet, you are asked to

accept the program as safe.

Consumer advocate Ralph Nader warns "... there is no practical solution for protecting our generation, much less our children's and grandchildren's, from the immense accumulation of lethal wastes that are inevitable in the nuclear power industry." Yet, you are asked to accept the program as safe.

According to a report by the Atomic Energy Commission's Regulatory Staff, U.S. nuclear plants are "besieged" by serious safety problems arising from faulty design and construction. Yet, you are asked to accept the program as safe.

The U.S. Geological Survey has found that there aren't enough known uranium reserves in the United States to fuel proposed nuclear power plants. Yet, you are asked to accept nuclear power as the answer to the oil crisis.

This is to enlighten you about how electricity is generated through nuclear power so that you might understand more precisely why the problems involved are so threatening.

This is also to advise you that there is an important step you can take to help control the nuclear risks. That step is your becoming a Sponsor of the Union of Concerned Scientists, the organization dedicated to preventing such a disaster.

What is a nuclear reactor and why is it so dangerous?

The heart of a nuclear power plant is an array of long, thin rods filled with pellets of uranium fuel. As uranium atoms are split within these fuel elements, energy is produced to heat water circulating through the reactor. This heated water produces steam which is carried to a turbine-generator, which spins to produce electricity.

If a pipe breaks which carries water to the fuel, emergency cooling water needs to reach the fuel *within 60 seconds* to prevent overheating, melting and release of radiation from the massive fuel "core" of the power plant. An emergency core cooling system (ECCS) has been designed to prevent such a catastrophe. If this backup cooling system fails to work effectively, the reactor core would overheat and the stage is set for major radiation release into the environment in which radioactive material in gaseous form could be carried by the wind to nearby cities.

Safety system is unproven

The public is being asked to accept the word of the nuclear industry that the currently installed emergency core cooling system can function properly to prevent this most dreaded of disasters. The fact remains, however, that there has been only limited testing of the emergency core cooling system—and *some of the tests reveal design defects and indicate that ECCS might fail if actually called upon. Sworn testimony of experts in the field reveals that the effectiveness of this critical reactor safety system has not been properly demonstrated.*

The problem of nuclear wastes

Radioactive nuclear wastes are created when nuclear fuel is used up during nuclear power plant operation. These wastes include strontium 90, cesium 137, and plutonium 239—exceedingly toxic substances. By the end of this century, the government estimates there will be hundreds of millions of cubic feet of low and high level nuclear wastes in the United States.

No method for long-term storage or disposal of these radioactive wastes has been proven. All proposed techniques for storing these wastes are in a research or development stage.

Of great concern are the many problems that have already developed in U.S. radioactive waste storage efforts. As an example: In June, 1973, it was discovered that 115,000 gallons of high level radioactive waste had leaked from a tank at the Atomic Energy Commission's

waste storage facility in Hanford, Washington. Investigation revealed that (1) the tank had been leaking for several weeks; (2) no automatic alarm system alerted anyone to the leak; (3) the management in charge of the storage facility did not review monitoring reports that would have shown the leak; (4) there was no preventive maintenance applied.

Why is Plutonium so dangerous?

Plutonium is the man-made element used in the atomic bomb that was dropped over Nagasaki, Japan in 1945. Plutonium's threat to life is more than just the atomic explosions it can be used to produce. A particle of plutonium the size of a large grain of pollen can cause lung cancer if inhaled. A typical nuclear power plant produces several hundred pounds of plutonium each year. *It takes plutonium half a million years to lose its killing power.*

It is feared that if plutonium ever gets into the hands of terrorists, they will gain an immense power to further their ends.

"...I would also like to commend the Union of Concerned Scientists for their persistence in pointing out problems that might otherwise be swept under the rug. If it had not been for the Union of Concerned Scientists and their colleagues, I believe the Reactor Safety Study [now officially repudiated by the U.S. Nuclear Regulatory Commission] would have remained the primary reference used by those who wish to provide assurance that nuclear power was safe..."

Congressman Morris Udall
Chairman, House Interior and Insular Affairs Committee

If you wish further information about the hazards of nuclear power, write to UCS at the address below.



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